Business and Personal,

The Charge for Insertion under this head is One Dollar a Line for each insertion. If the Notice exceeds Four Lines, One Dollar and a Half per Line will be charged.

Agricultural Implements and Industrial Machinery for Export and Domestic Use. R.H.Allen & Co., N.Y.

Three of the best boiler feed water hight regulators wanted by W. E. Farrell, No. 510 Minor St., Phila.

Old rails of less than 30 lbs. per yard wanted. C. S. Bradley, P.O. Box 826, Galesburg, Ill.

For Best and Simplest Yacht and Vertical Stationary Engines, Boilers, &c., address William J. Sanderson, 21 Church St., Syracuse. N. Y.

Wanted—2d h'd Mortice Machine and Tenoning Machine. Address E. C. Munson, Herkimer, N. Y., giving maker, condition, price, &c.

Wanted—A 2d h'd Foot Lathe. W. N. Callender, Albany, N. Y.

Hyatt & Co.'s Varnishes and Japans, as to price, color, purity, and durability, are cheaper by comparison than any other sextant. 246 Grand st., N.Y. Factory, Newark, N. J. Send for circular and descriptive price list.

I want a reliable and competent person to introduce my improved Cross Head and Link Block—a good opportunity for a good man. W. A. Alexander, Box 130, Mobile, Ala.

Perfect Stave Jointer—Late Patent. For Sale, State Rights, or on Royalty. Sample Machine furnished. Address B.&W. Barker, Box 92, River Falls, Pierce co., Wis.

Planing Machines—For the best and cheapest traveling-bed or "Farrar" Planers—24, 27, and 30 in.—also 15, 18, and 24 in. stationary-bed machines, address Lane M'f'g Company, Montpelier, Vermont.

More than Ten Thousand Crank Shafts made by Chester Steel Castings Co., now running; 8 years' constant use prove them stronger and more durable than wrought iron. See advertisement, page 221.

See Boult's Paneling, Moulding, and Dovetailing Machine at Centennial, B. 8-55. Send for pamphlet and sample of work. B. C. Mach'y Co., Battle Creek, Mich.

Wanted—Competent man to rent low a complete Boiler Shop connected with old established Machine Works. Address J. A. A., 44 York St. Baltimore, Md.

For 13, 15, 16 & 18 in. Swing Engine Lathes, address Star Tool Co., Providence, R. I.

The Scientific American Supplement—Any desired back number can be had for 10 cents, at this office, or almost any news store.

Leather and Rubber Belting, Packing, Hose, & Manufacturer's Supplies of all kinds. Greene, Tweed & Co., 18 Park Place, New York.

Baxter's Adjustable Wrenches, used by all first class mechanics. Price reduced. Greene, Tweed & Co., 18 Park Place, New York.

Lane's "Monitor" Turbine Water-Wheels are not perpetual motion machines, but they combine more and greater advantages than any other water motors offered the public. Address Lane Mfg Co., Montpelier. Vt.

To stop leaks in boiler tubes, use Quinn's Patent Ferrules. Address S. M. Co, So. Newmarket, N.H.

Water, Gas, and Steam Pipe, Wrought Iron. Send for prices. Bailey, Farrell & Co., Pittsburgh, Pa.

For Solid Wrought-iron Beams, etc., see advertisement. Address Union Iron Mills Pittsburgh, Pa. for lithograph, &c.

Shaw's accurate and U. S. Standard Mercury Gauges, Steam, Vacuum, Hydraulic, and Test Gauges, &c., 915 Ridge Avenue, Philadelphia, Pa.

Solid Emery Vulcanite Wheels—The Solid Orignal Emery Wheel—other kinds imitations and inferior. Caution.—Our name is stamped in full on all our best Standard Belting, Packing, and Hose. Buy that only. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, New York.

Handbook of Useful Information for Lumbermen, Millwrights, and Engineers (152 pages) sent free by Lane M'f'g Company, Montpelier, Vermont.

Models for Inventors. H. B. Morris, Ithaca, N.Y.

M. Shaw, Manufacturer of Insulated Wire for galvanic and telegraph purposes, &c., 259 W. 27th St., N.Y.

F. C. Beach & Co., makers of the Tom Thumb Telegraph and other electrical machines, have removed to 530 Water Street, New York.

Pat'd Graining Stencils—J. J. Callow, Clevel'd, O.

Lathe Dogs, Expanding Mandrels, Steel Clamps, &c., for Machinists. Manufactured by C. W. LeCount, So. Norwalk, Ct. Send for reduced Price List.

Driving Belts made to order, to accomplish work required. Send full particulars for prices to C. W. Arny, 148 North Third St., Philadelphia, Pa.

"Dead Stroke" Power Hammers—recently greatly improved, increasing cost over 10 per cent. Prices reduced over 20 per cent. Hull & Belden Co., Danbury, Ct.

Clapboard Machinery—Sawing, dressing, and trimming—a specialty of the Lane M'f'g Company, Montpelier, Vermont.

Power & Foot Presses & all Fruit-can Tools. Ferracute Wks., Bridgeton, N.J. & C. 27, Mchy. Hall, Cent'l.

No. 3 Woodworth Planing, Tonguing, and Grooving Machine for Sale Cheap. Address Wm. M. Hawes Fall River, Mass.

Steel Castings, from one lb. to five thousand lbs. Invaluable for strength and durability. Circulars free. Pittsburgh Steel Casting Co., Pittsburgh, Pa.

Circular Saw Mills of the celebrated and popular Lane" pattern, made under direct supervision of inventor by the Lane M'f'g Company, Montpelier, Vt.

For best Presses, Dies, and Fruit Can Tools, Bliss & Williams, cor. of Plymouth and Jay, Brooklyn, N. Y.

Hotchkiss & Ball, Meriden, Conn., Foundrymen and workers of sheet metal. Fine Gray Iron Castings to order. Job work solicited.

For Solid Emery Wheels and Machinery, send to the Union Stone Co., Boston, Mass., for circular.

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing metals. E. Lyon, 470 Grand Street, New York.

Diamond Tools—J. Dickinson, 64 Nassau St., N. Y.

Notes & Queries

It has been our custom for thirty years past to devote a considerable space to the answering of questions by correspondents; so useful have these labors proved that the SCIENTIFIC AMERICAN office has become the factotum, or headquarters to which everybody sends, who wants special information upon any particular subject. So large is the number of our correspondents, so wide the range of their inquiries, so desirous are we to meet their wants and supply correct information, that we are obliged to employ the constant assistance of a considerable staff of experienced writers, who have the requisite knowledge or access to the latest and best sources of information. For example, questions relating to steam engines, boilers, boats, locomotives, railways, etc., are considered and answered by a professional engineer of distinguished ability and extensive practical experience. Enquiries relating to electricity are answered by one of the most able and prominent practical electricians in this country. Astronomical queries by a practical astronomer. Chemical enquiries by one of our most eminent and experienced professors of chemistry; and so on through all the various departments. In this way we are enabled to answer the thousands of questions and furnish the large mass of information which these correspondence columns present. The large number of questions sent—they pour in upon us from all parts of the world—renders it impossible for us to publish all. The editor selects from the mass those that he thinks most likely to be of general interest to the readers of the SCIENTIFIC AMERICAN. These, with the replies, are printed; the remainder go into the waste basket. Many of the rejected questions are of a primitive or personal nature, which should be answered by mail; in fact hundreds of correspondents desire a special reply by post, but very few of them are thoughtful enough to enclose so much as a postage stamp. We could in many cases send a brief reply by mail if the writer were to enclose a small fee, a dollar or more, according to the nature or importance of the case. When we cannot furnish the information, the money is promptly returned to the sender.

W. L. L. will find a good recipe for aquarium cement on p. 80, vol. 31. To blacken a brass microscope tube, see p. 362, vol. 25.—C. C. C. will find an explanation of duplex telegraphy on p. 235, vol. 34.—A. B. C. will find directions for browning gun barrels on p. 11, vol. 32.—A. S. should read the directions for constructing the simple battery again.—P. M. and W. M. will find directions for nickel plating cast iron and steel on p. 186, vol. 34.—C. W. T. can etch glass with hydrofluoric acid. See p. 409, vol. 31.—O. A. Jr. should read our article on the horse power of engines on p. 33, vol. 33.—C. L. P. can solder the parts of his brass oil tank together. See p. 251, vol. 28.—A. P. P. will find a recipe for a depilatory on p. 186, vol. 34.—O. J. will find a recipe for a gold solder on p. 251, vol. 28.—M. G. will find directions for making vinegar on p. 106, vol. 32.—A. R. will find full particulars of the New York canal steamer reward on pp. 288, 295, vol. 24.—H. H. can get rid of roaches and bugs by using the remedy described on p. 315, vol. 32.—G. Z. will find a recipe for a cement for joining stone, etc., on p. 251, vol. 31.—F. H. W. will find directions for lighting gas by electricity on p. 4, vol. 29.—M. will find instructions for annealing steel castings on p. 298, vol. 24.—B. will find directions for removing fruit stains from ivory on p. 10, vol. 32.—E. S. R. is assured that the pretensions of the divining rod men, for discovering water, precious metals, etc., in the earth, are all humbug.—E. B. W. will find an answer to his query as to the sinking of a body in deep water on p. 208, vol. 33.—F. C. can keep small steel articles from rusting by the method described on p. 169, vol. 33.—A. K. J. will find an article on the artificial production of cold on p. 351. vol. 34.—G. C. M. can find the power of hisspring only by experiment.—F. A.P. will find directions for bronzing on iron on p. 283, vol. 31. For bronzing on brass, see p. 51, vol. 33.—Will D. W. A., of Atlanta, Ga., send us his name?—J. M. should consult a physician as to the feet troubles.—B. M. E. will find a good recipe for indelible ink on p. 129, vol. 28.—W. H. R. is informed that the shellac and alcohol preparation he mentions is French polish. See p. 11, vol. 32.—J. J. D. B. will find a recipe for a black walnut stain on p. 90, vol. 32.—D. W. D. will find a recipe for a paint for outdoor work on cement on p. 277, vol. 26.—W. T. B. will find directions for building an ice house on p. 251, vol. 31.—A. E. R. will find a description of malleable cast iron on p. 138, vol. 29.—M. G. will find an excellent article on the nature of heat on p. 325, vol. 33.—T. A. should keep the brass work on his locomotive bright by the method described on p. 102, vol. 25.—T. W. F. should put nitric acid in the porous, and salt water in the glass, cell of his battery.—L. J. W. will find directions for gilding wood on p. 90, vol. 30.—E. H. F. will find a recipe for waterproofing canvas on p. 347, vol. 31.—L. H. will find directions for building an icehouse on p. 251, vol. 31.—J. P. can attach leather to his iron pulleys by following the directions on p. 409, vol. 33.—S. A. H. can prevent the accumulation of rust on his tools by following the directions on p. 169, vol. 33.—T. S. D. will find directions for preserving birds on p. 159, vol. 32.—L. F. L. will find a recipe for bronze on brass on p. 51, vol. 33. For bronze on iron, see p. 283, vol. 31.—D. T. W. will find a recipe for indelible ink on p. 129, vol. 28.—L. D., F. P., J. H., W. S. C., J. B. H., E. G. A., G. C. M., O. H. B., R. J., H. A. M., and many others, who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogues.

(1) P. says: IN the SCIENTIFIC AMERICAN SUPPLEMENT, August 5, No. 32, you give very minute drawings of a boiler and engine for a navy cutter, with size of boat, etc. What speed would a boat, built with such proportions, etc., attain? A. If the boat has a good model, it should attain a speed of 8½ or 9 miles an hour, in smooth water.

(2) J. A. B. says: 1. In your issue of August 9 you state that the improved Holtz eleotric machine has two plates that revolve in opposite directions. You tell how the collecting arms are placed, but I do not understand how the sectors are placed. What is the diameter of the plates in the best machines? Should they be of plate glass, or will the best window glass do as well? What should be the thickness of the glass to give the best effects? What published work gives the best exposition of the Holtz machine? A. You will find a full statement of the machine in Dechanel's "Natural Philosophy," which is now published in parts. Get the part on electricity and magnetism.

(3) A. S. asks: How large a vertical boiler will be needed to run two engines 8x8 inches, the boiler having plenty of heating surface, and the engines running with 100 lbs. steam? A. Make one 4½ to 5 feet in diameter and 7 feet high.

(4) A. G. W. asks: 1. How many revolutions should a 13 inch bottom runner corn mill make to give best results in quantity and quality of meal? A. From 800 to 900 a minute. 2. How much can it grind per hour with an eight horse power engine? A. From 10 to 12 bushels. 3. I wish to run a 50 saw cotton gin at the same time with the corn mill. Can the mill grind as much under such conditions as it could when I throw the gin off? A. Probably the gin will make a difference of 2 or 3 bushels an hour.

(5) F. C. says: We have a boiler that does not steam very well. The heat passes under, then back through the tubes, then over and under the top. Will turning the air from a blacksmith's fan underneath the fire make the fire burn more strongly, or should we pass it through above the fire? A. If the trouble is lack of draft, the first plan will doubtless prove serviceable.

(6) W. S. asks: What is the greatest depth of water explored with a diving bell? A. We have seen an account of a diver working at a depth of about 160 feet. Perhaps some of our readers may know of instances in which still greater depths have been reached. In the use of either the bell or diver's suit, weights are attached to make the apparatus sink, and air is forced into the interior through a flexible tube.

(7) K. W. D. says: A man weighing 200 lbs. is hung. Would a keg of nails weighing 200 lbs. exert more strain on the rope than the man, the drop being 3 feet? A. Possibly it might, being less elastic.

(8) R. W. H. says: We have a coal shaft 320 feet deep, which has a pump in the bottom: and the steam is furnished from the surface of the ground, and the pipes, both water and steam, are rusted out very fast by the water that runs down the shaft. It is salt water. Can you tell us of a remedy? A. The surest remedy would be the use of copper pipes.

(9) J. S. Jr. asks: How can I separate white lead from tallow or oil? A. Remove the oil and grease by treating with bisulphide of carbon.

(10) H. J. M. asks: 1. Is the bulk of the starch used made from corn? A. No: the greater part is made from potatoes, rice, and wheat. 2. What is the process of making starch from corn? A. The crushed grain is macerated with a weak soda lye, which dissolves the gluten and leaves the starch. 3. What percentage of starch does corn contain? A. American corn contains 50 or 60 per cent of starch. 4. Does it require a large amount of machinery and capital to engage in this business? A. Yes.

(11) H. E. asks: What can I apply to the inner surface of a hogshead to protect the wood from the action of the chloride of sodium, commonly called Javelle water? A. You probably mean the hypochlorite of sodium (*eau Javelle*). Try coating the interior of the casks with melted paraffin.

(12) H. A. S. says: 1. Which of the elements may be volatilized so as to be detected by the spectroscope in a hydrogen flame? A. Potassium, sodium, barium, strontium, and other metals forming, with oxygen, alkalies and alkaline earths. 2. Which may be detected in an oxyhydrogen flame? A. All the metals and many of the other elements, but not so well as with the electric lamp. 3. Which may be detected in the electric sparks of different lengths? A. All the elements—the metals, the gases, and the vapors of the non-metallic elements.

(13) C. C. R. says: I have some printer's ink that takes from 24 to 36 hours to dry. Can you tell me of anything that will make it dry more quickly? A. We understand that finely powdered permanganate of potassa, introduced in small quantities, is admirably suited for this purpose.

(14) J. W. W. says: Boerrhave asserts that, by putting alcohol into an ox bladder and exposing it to the sun, he produced absolute alcohol by exosmose. Donovan disbelieves it. Who is correct? A. Absolute alcohol cannot be obtained by such a method. 2. Do whisky, brandy, and gin lose or gain in strength after they are first made? A. This depends altogether upon what condition the liquors are in when bottled. If properly prepared they seldom lose in strength.

(15) A. D. S. says: I have seen Brussels carpets scrubbed with soap and water, in which was put something that brightened the colors in the oldest carpets. Can you tell me what was used for this purpose? A. It was probably carbonate of soda or potash.

(16) J. T. S. asks: 1. What must I do to make common printing ink copyable? A. We do not think that this has ever been satisfactorily accomplished. 2. Can type metal be soldered to brass with common plumber's solder? A. Yes.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

J. S. H.—It appears to be a piece of iron slag. It is not of meteoric origin.—S. J., Frostburg, Md.—The samples became separated from the letter, and, as they were not properly marked, were lost.—M. P. T.—It is fire clay.—S. C.—No. 1 is limestone. No. 2 is felspar.—A. B.—The red rock is massive iron garnet. The other is a species of hornblende.—T. W.—The clay is of a fine quality, but does contain a small quantity of iron; otherwise it is nearly pure.—W. H. G.—It is white sulphide of iron (marcasite).—E. C.—The yellow bodies consist of clay colored by oxide of iron (yellow ocher). The dark variety might be employed as a fire clay, and for making cheap drain pipes and pottery. The other specimens are kaolin, of different grades of purity.—C. S.—It is hornblende.—W. E. D.—The water contains an injurious amount of organic matter.—M. R. H.—No. 1 is sulphide of iron and quartz.—No. 2 is quartz and mica schist. No. 3 is slate.—G. J.—No. 1 is Amazon stone, a species of orthoclase. No. 2 is yellow jasper. No. 3 is red jasper. No. 4 contains lead and silver. No 5 is smoky quartz. No. 6 is hornblende and sulphide of iron.—No. 7 is hornblende, felspar, and carbonate of copper.—R. H. F.—It is an impure clay, a silicate of alumina.—A. B. O.—The water contains a large quantity of sulphides and organic matter. It has been contaminated by contact by the cork and camphor, which the bottle previously contained.—J. H. S.—No. 1 is shale. No. 2 is sandstone containing considerable iron pyrites.—L. B. C.—The sample does not contain nickel.—J. G. W.—It is an impure clay containing small specks of iron pyrites. In order to classify the shells, it would be necessary to have more of them.—G. W. W., who asked about new nickel electrolyte, does not state what his trouble was. The ammonia used was possibly not strong enough. The bath is simply a solution of cyanide of nickel in ammonia.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

On Hydrophobia. By L. M. N.
On Advancing Science. By N. M. R.
On Salicylic Acid. By W. E. F.

Also inquiries and answers from the following:

H. T.—J. R.—B. L.—J. H.—J. A.—T. W.—C. W.—A. N.—A. W.—W. H. F.—M. B.—J. M.—C. A, M.—R. N.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "How can I find a partner with $5,000 capital? Who sells model steam engines? Who makes the best truss, for the relief of hernia? Who makes plate glass show cases? Who sells fireproof safes? Who sells sewing machine attachments at wholesale?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal." which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

September 12, 1876,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, New York city.

Alizarine, etc., preparation of, Simpson *et al.*	182,234
Amalgamator, W. McCourt	182,027
Animal trap, H. T. Stith	182,241
Anvil, J. Jenkins	182,120
Apple corer, I. Rogers	182,133
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Blackboard, J. W. C. Gilman	182,065
Blast nozzle for furnaces, A. Lawrence	182,204
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Camp stool, B. F. Larrabee	182,078
Cane and umbrella, Kindermann *et al.*	182,025
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Car coupling, E. D. Brown	182,017
Car coupling, S. Hamer	182,114
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Car coupling, P. E. Sloan	182,089

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